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**The beneficial effect of silica on the activity and thermal stability of PtCoFerrierite-washcoated cordierite monoliths for the SCR of NO<sub>x</sub> with CH<sub>4</sub>**Alicia V. Boix, Juan M. Zamaro, Eduardo A. Lombardo and Eduardo E. Miró  

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Available online 27 June 2003.**Abstract**

PtCoFerrierite washcoated on a ceramic monolith is an active and selective catalyst for the SCR of NO<sub>x</sub> with methane. For our system, we found that the addition of a binder to the slurry used for the washcoat is necessary to improve the adherence and to obtain a selective catalyst. In our case, we used 2 wt.% of Cabot Silica. Ultrasound experiments used to comparatively evaluate the coating adherence showed that silica prevents the washcoat loss due to attrition. Similar monolithic catalysts but prepared without a binder, resulted in catalysts with poor activity for NO<sub>x</sub> reduction, but still active for the deep oxidation of methane with oxygen. Monoliths washcoated without a binder showed both Pt segregation to the outer surface of zeolite crystals and formation of the non-selective Co<sub>3</sub>O<sub>4</sub>. Segregated Pt clusters and cobalt oxide promote the methane combustion with oxygen, thus leaving the NO<sub>x</sub> molecules unreacted. Moreover, due to Pt segregation, the necessary intimate contact between Pt and Co active species is not favored in this catalyst, which also contributes to the low selectivity to N<sub>2</sub>.

**Author Keywords:** SCR of NO<sub>x</sub>; Zeolite; Zeolite washcoated monoliths; NO<sub>x</sub> + CH<sub>4</sub>

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